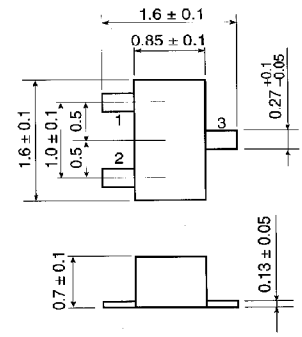
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

RN1101F, RN1102F, RN1103F
RN1104F, RN1105F, RN1106F

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT

AND DRIVER CIRCUIT APPLICATIONS.

Unit in mm

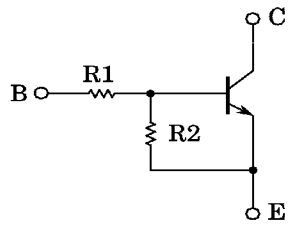


1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	—
EIAJ	—
TOSHIBA	2-2HA1A

- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2101F~RN2106F

EQUIVALENT CIRCUIT AND BIAS RESISTOR VALUES



TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1101F	4.7	4.7
RN1102F	10	10
RN1103F	22	22
RN1104F	47	47
RN1105F	2.2	47
RN1106F	4.7	47

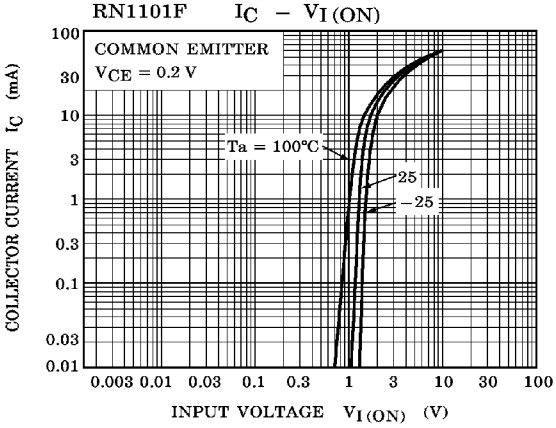
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1101F~1106F	V_{CBO}	50	V
Collector-Emitter Voltage		V_{CEO}	50	V
Emitter-Base Voltage	RN1101F~1104F	V_{EBO}	10	V
	RN1105F, 1106F		5	
Collector Current	RN1101F~1106F	I_C	100	mA
Collector Power Dissipation		P_C	100	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

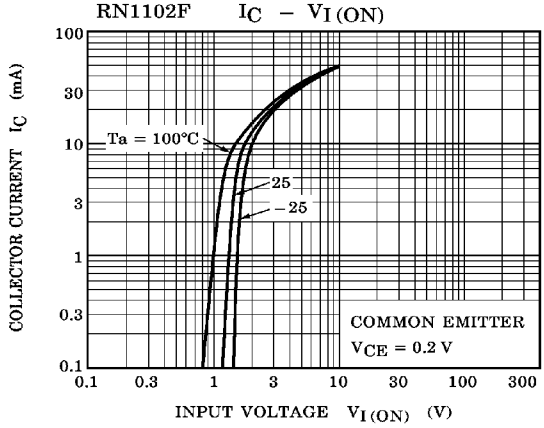
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1101F~1106F	I_{CBO}	V_{CB} = 50 V, I_E = 0	—	—	100	nA
		I_{CEO}	V_{CE} = 50 V, I_B = 0	—	—	500	
Emitter Cut-off Current	RN1101F	I_{EBO}	V_{EB} = 10 V, I_C = 0	0.82	—	1.52	mA
	RN1102F			0.38	—	0.71	
	RN1103F			0.17	—	0.33	
	RN1104F			0.082	—	0.15	
	RN1105F		V_{EB} = 5 V, I_C = 0	0.078	—	0.145	
	RN1106F			0.074	—	0.138	
DC Current Gain	RN1101F	h_{FE}	V_{CE} = 5 V, I_C = 10 mA	30	—	—	
	RN1102F			50	—	—	
	RN1103F			70	—	—	
	RN1104F			80	—	—	
	RN1105F			80	—	—	
	RN1106F			80	—	—	
Collector-Emitter Saturation Voltage	RN1101F~1106F	$V_{CE\ (sat)}$	I_C = 5 mA, I_B = 0.25 mA	—	0.1	0.3	V
Input Voltage (ON)	RN1101F	$V_{I\ (ON)}$	V_{CE} = 0.2 V, I_C = 5 mA	1.1	—	2.0	V
	RN1102F			1.2	—	2.4	
	RN1103F			1.3	—	3.0	
	RN1104F			1.5	—	5.0	
	RN1105F			0.6	—	1.1	
	RN1106F			0.7	—	1.3	
Input Voltage (OFF)	RN1101F~1104F	$V_{I\ (OFF)}$	V_{CE} = 5 V, I_C = 0.1 mA	1.0	—	1.5	V
	RN1105F, 1106F			0.5	—	0.8	
Transition Frequency	RN1101F~1106F	f_T	V_{CE} = 10 V, I_C = 5 mA	—	250	—	MHz
Collector Output Capacitance	RN1101F~1106F	C_{ob}	V_{CB} = 10 V, I_E = 0, f= 1 MHz	—	3	6	pF
Input Resistor	RN1101F	R1	—	3.29	4.7	6.11	kΩ
	RN1102F			7	10	13	
	RN1103F			15.4	22	28.6	
	RN1104F			32.9	47	61.1	
	RN1105F			1.54	2.2	2.86	
	RN1106F			3.29	4.7	6.11	
Resistor Ratio	RN1101F~1104F	R1 / R2	—	0.9	1.0	1.1	
	RN1105F			0.0421	0.0468	0.0515	
	RN1106F			0.09	0.1	0.11	

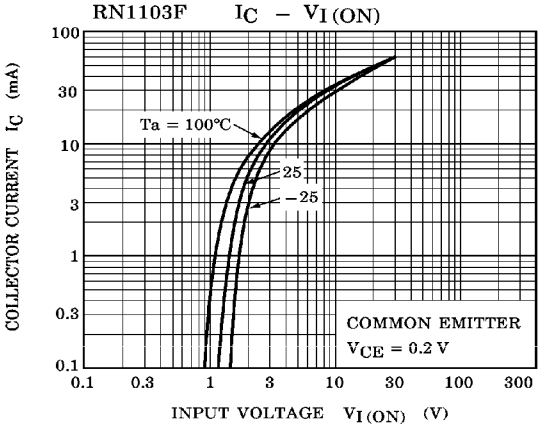
RN1101F I_C – $V_{I(ON)}$



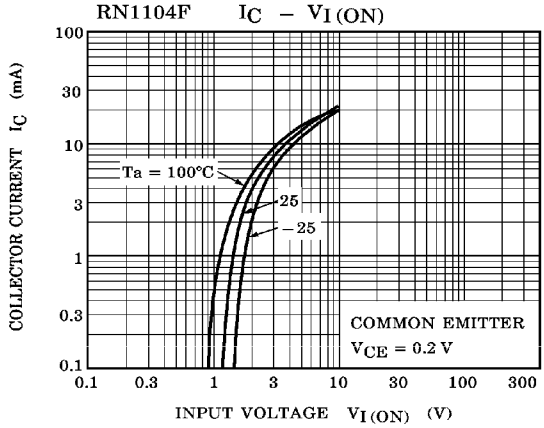
RN1102F I_C – $V_{I(ON)}$



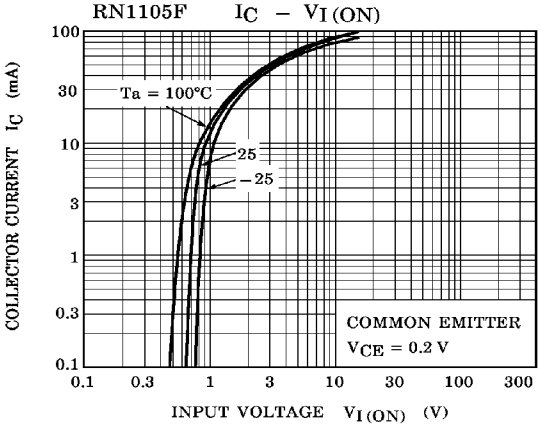
RN1103F I_C – $V_{I(ON)}$



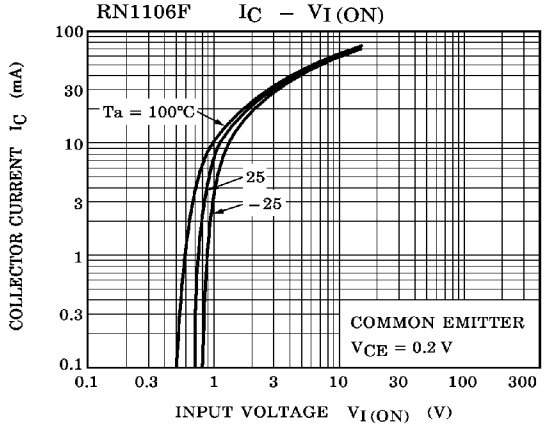
RN1104F I_C – $V_{I(ON)}$



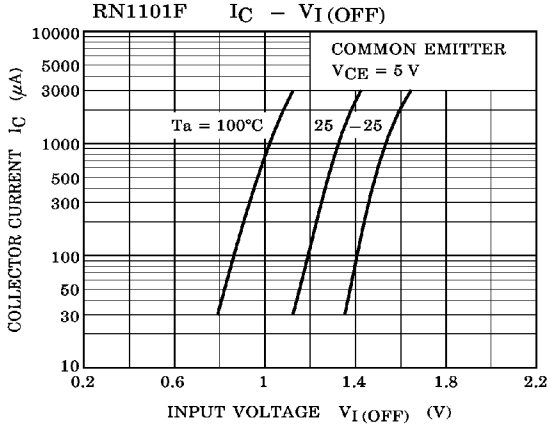
RN1105F I_C – $V_{I(ON)}$



RN1106F I_C – $V_{I(ON)}$



RN1101F I_C – $V_{I(OFF)}$



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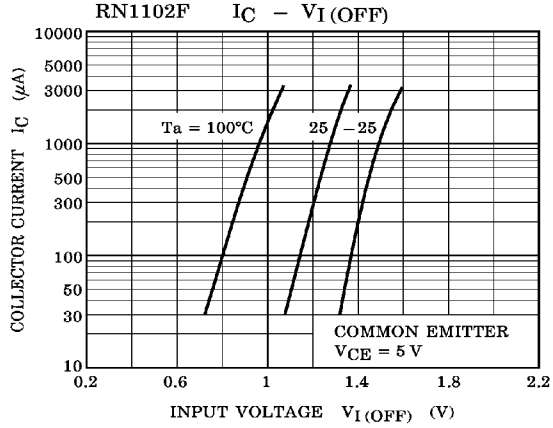

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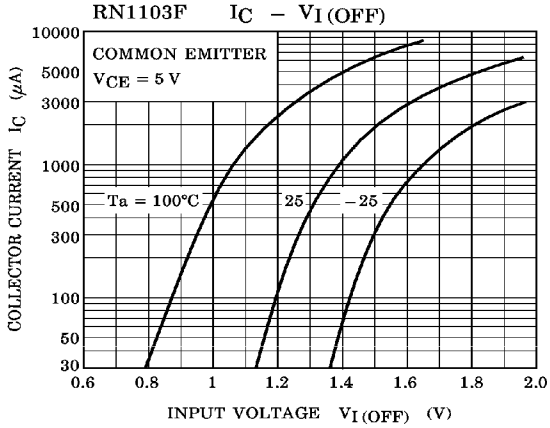

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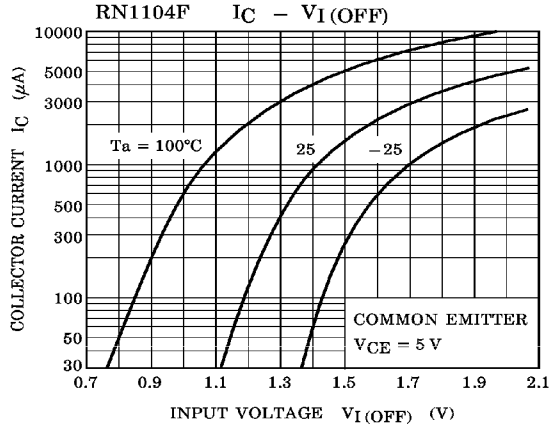

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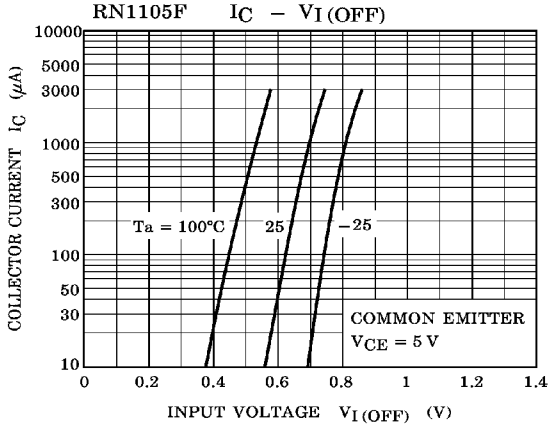
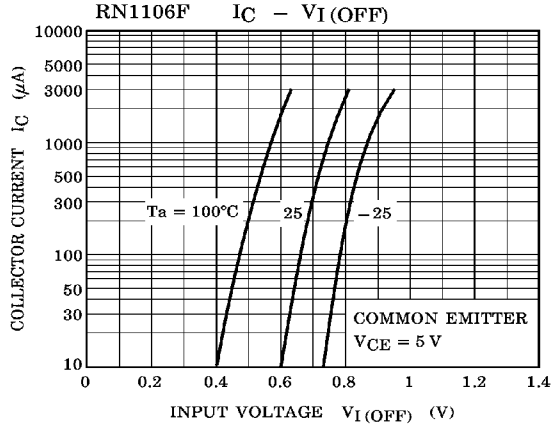
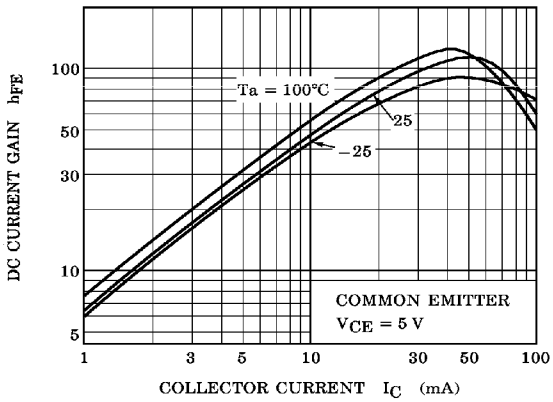


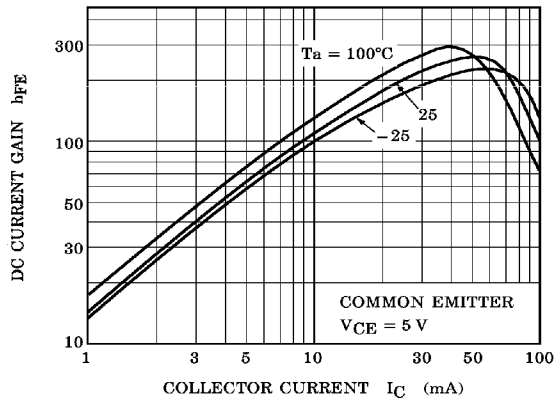
RN1106F I_C – $V_{I(OFF)}$



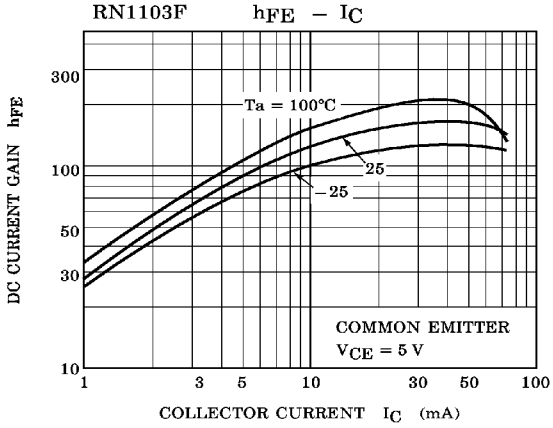
RN1101F h_{FE} – I_C



RN1102F h_{FE} – I_C



RN1103F h_{FE} – I_C



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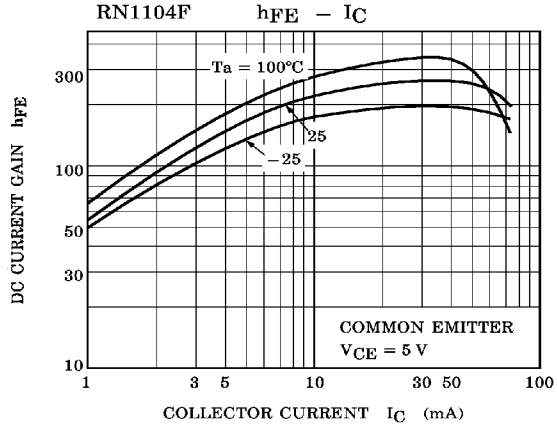
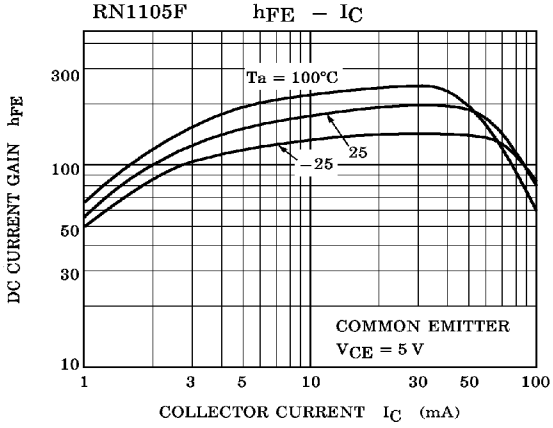
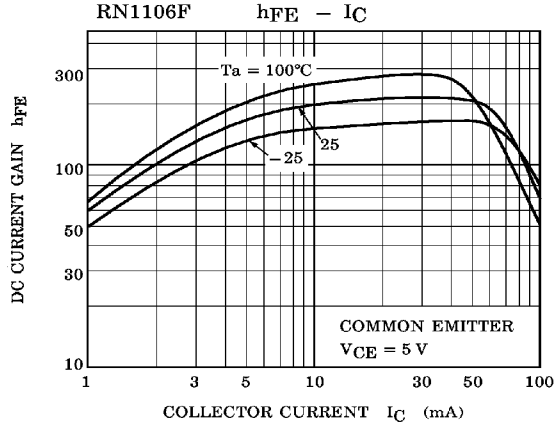


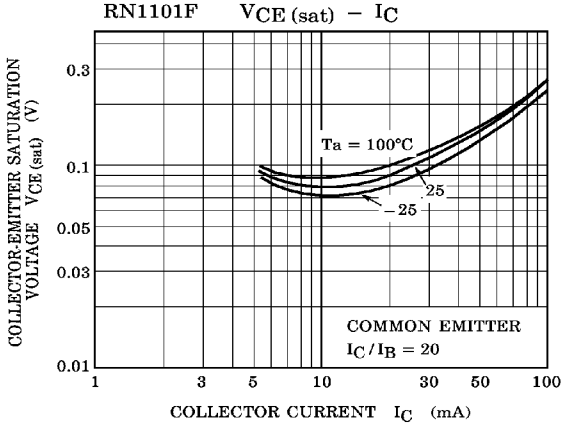
RN1105F h_{FE} – I_C



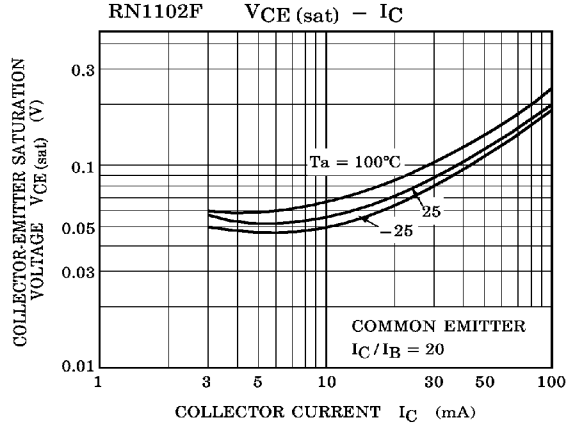
RN1106F h_{FE} – I_C



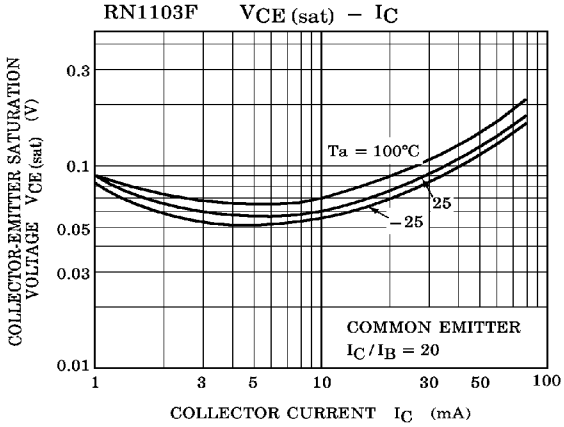
RN1101F $V_{CE\,(sat)}$ – I_C



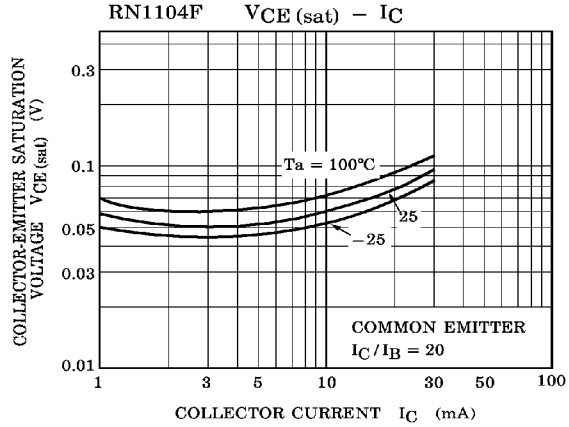
RN1102F $V_{CE\,(sat)}$ – I_C



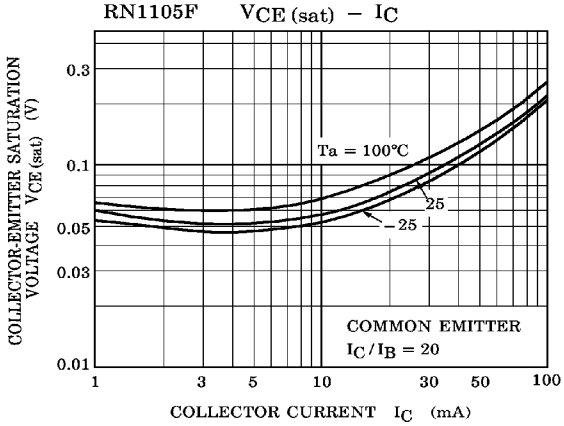
RN1103F $V_{CE\,(sat)}$ – I_C



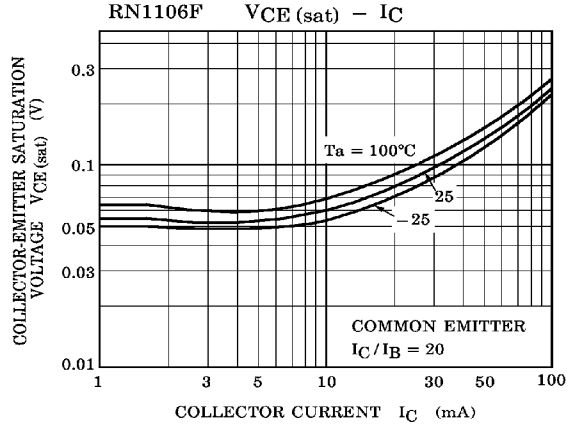
RN1104F $V_{CE\,(sat)}$ – I_C

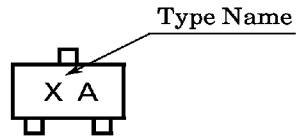
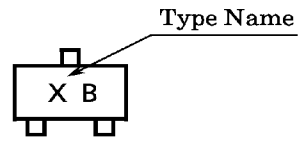
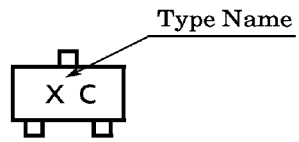
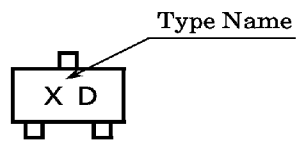
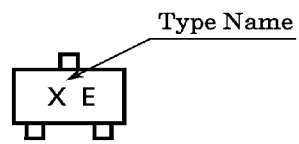


RN1105F $V_{CE\,(sat)}$ – I_C



RN1106F $V_{CE\,(sat)}$ – I_C



TYPE NAME	MARKING
RN1101F	
RN1102F	
RN1103F	
RN1104F	
RN1105F	
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